



Welcome to
LiveStream
Connecticut River Conservancy



Clean water. Healthy habitat. Thriving communities.

Connecticut River Conservancy

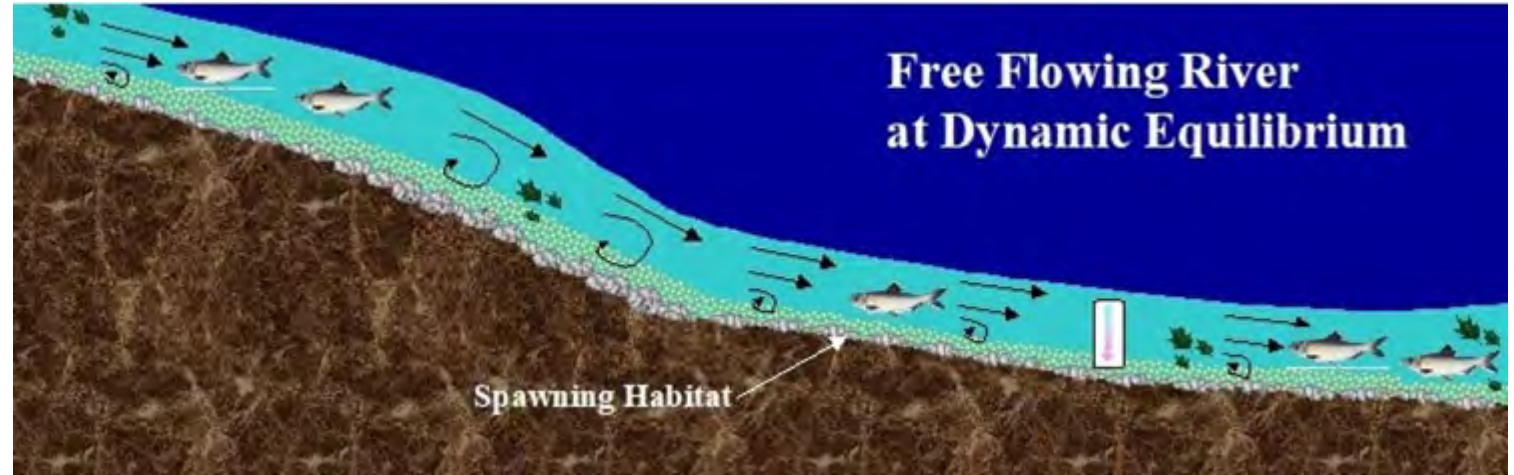
The Nature
Conservancy



Hydropower in NH & VT:

**Three dams, two states, one better
deal for rivers!**

Ecological Impacts of Dams





Federal Energy Regulatory Commission

- **FERC (not a curse word!)**
- **Issues licenses for all non-federal hydropower projects**
- **License terms are 30-50 y**

The Vernon Dam license was last updated in 1979

How old were you!

Photo: Vernon Dam; © TNC/Eric Aldrich

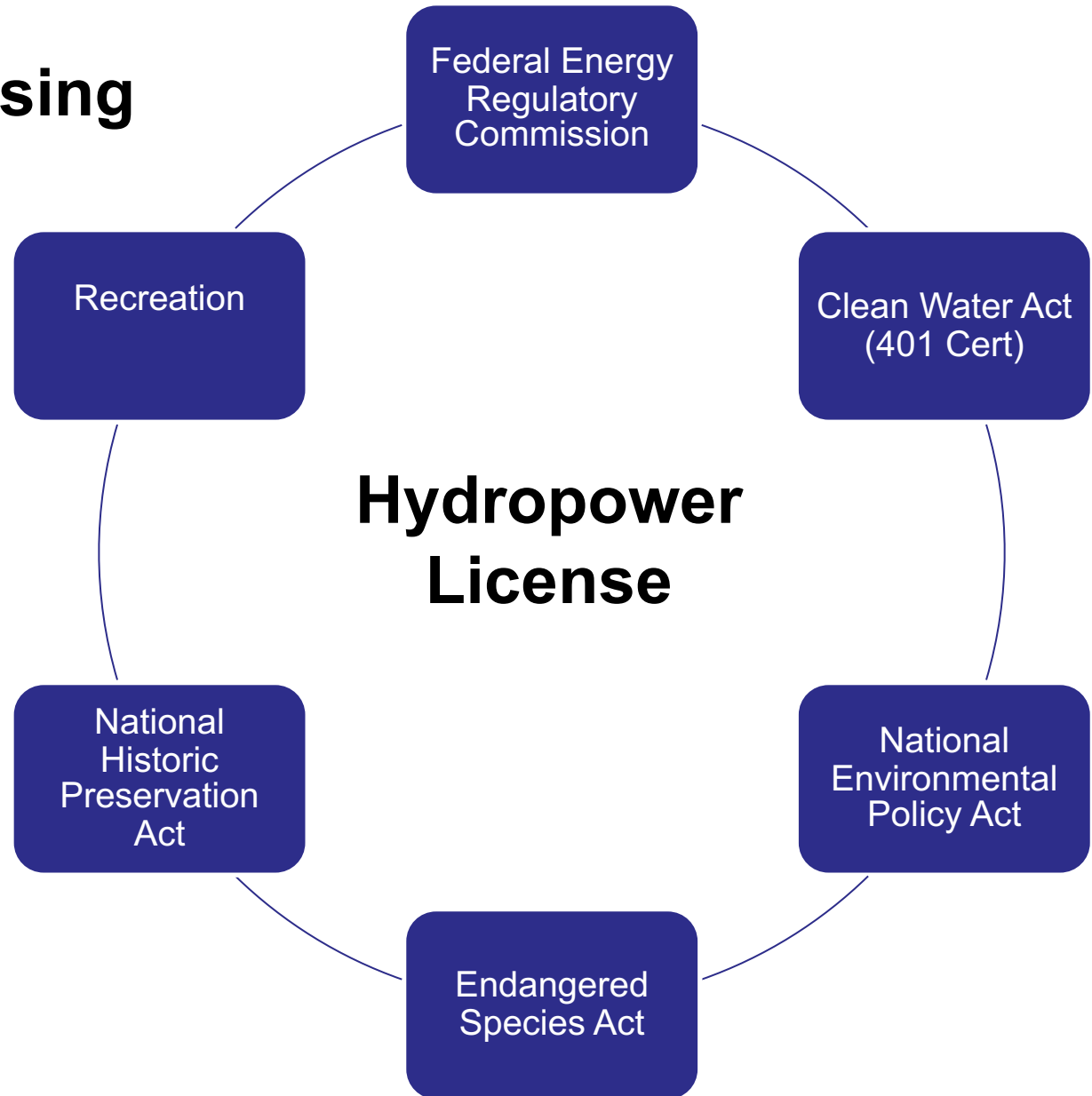


Federal Power Act

- Created FERC and associated regulatory statutes
- In 1986 the “***equal consideration***” ***clause*** was added; FERC is required to give "equal consideration" to:
 - power and development;
 - energy conservation;
 - protection of fish and wildlife and their habitat;
 - recreational opportunities, and
 - preservation of other aspects of environmental quality, e.g., water quality and historic preservation

FERC Hydropower (Re)Licensing

- Takes into account multiple stakeholder values (“equal consideration”)
- Is a complex process integrating many different laws and regulations



Great River Hydro



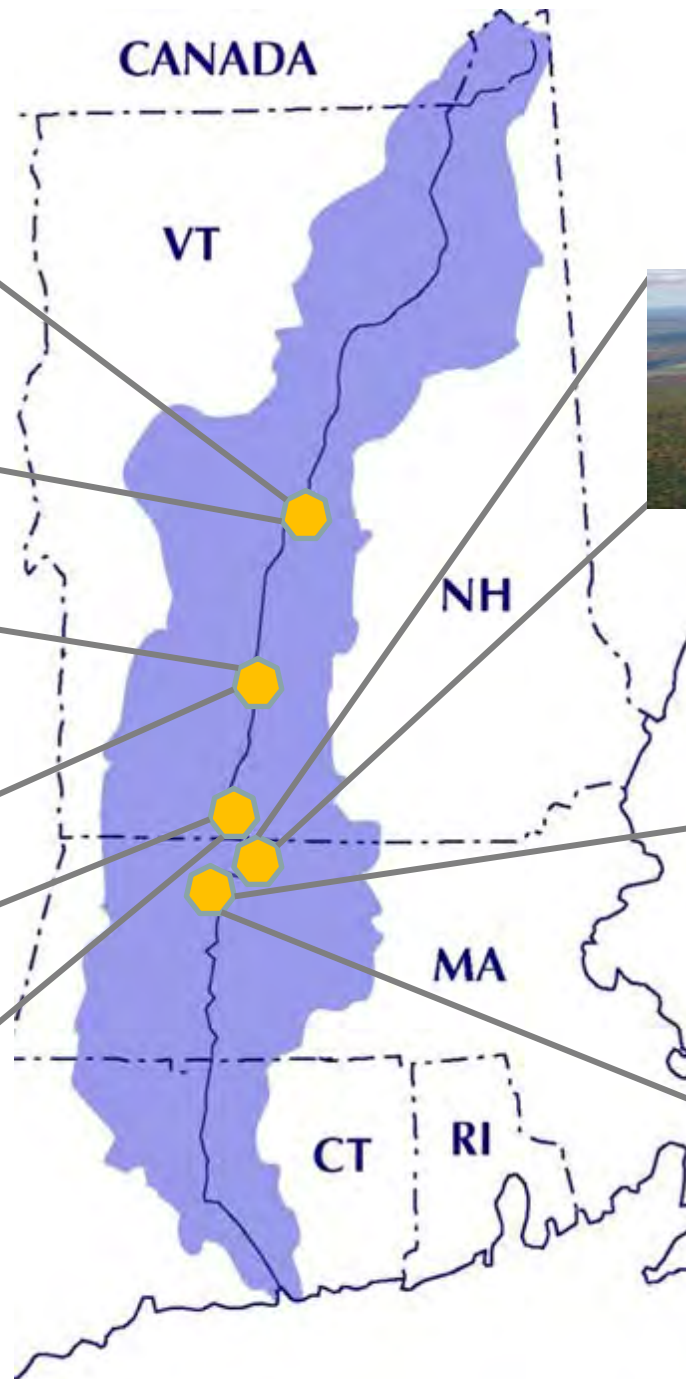
Wilder Dam



Bellows Falls Dam



Vernon Dam



FirstLight



**Northfield Mtn
Pumped Storage**



Turners Falls Dam

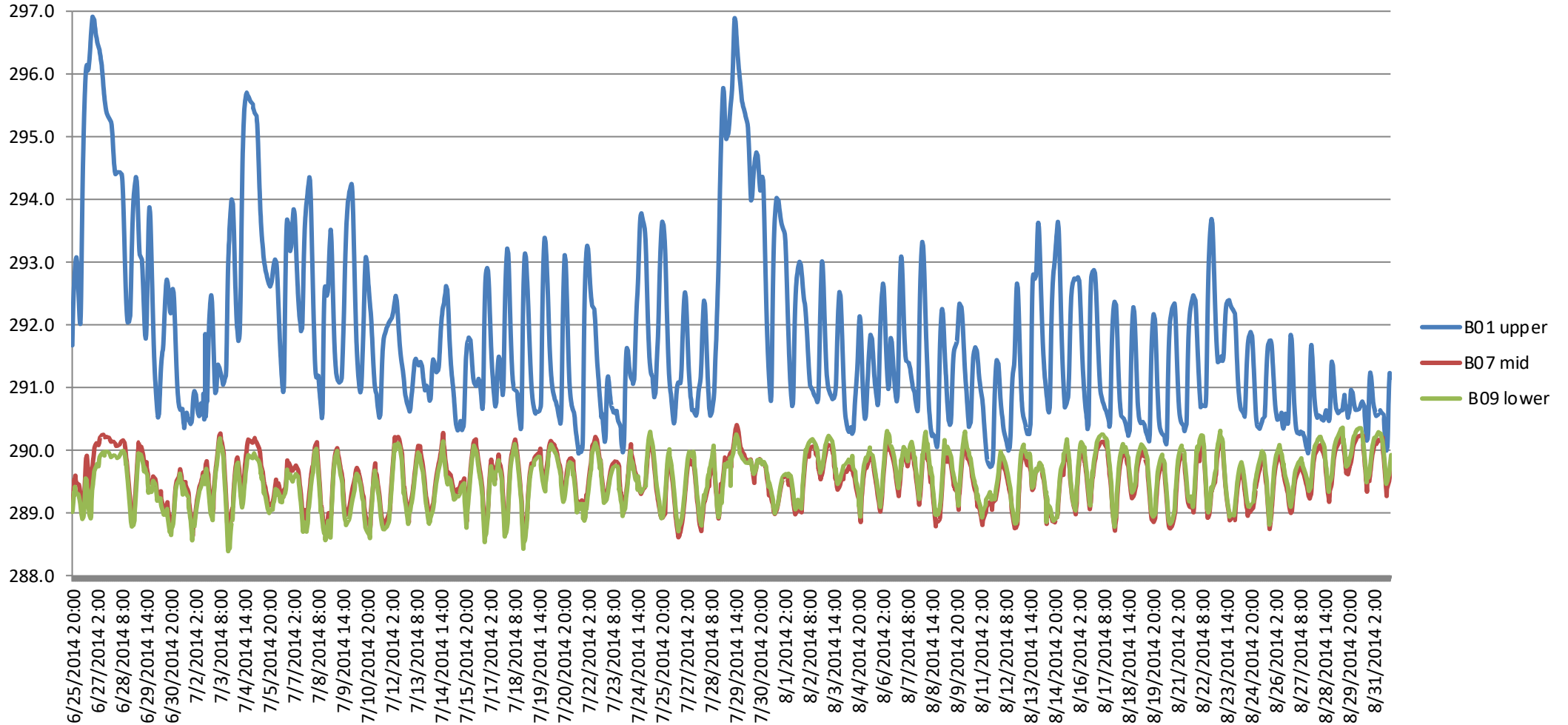
The screenshot displays the ArcLight website interface. At the top left, the ArcLight logo is visible. Below it, a navigation menu lists 'ACTIVE - POWER' with sub-items: 'AL Chief Power', 'Eastern Generation', 'Orca', 'Busbar II', 'Great River Hydro', and 'Tailrace Holding'. The main content area features a modal window for 'GREAT RIVER HYDRO'. This window includes a circular logo with a mountain and a bear, and text stating: 'Location: New England', 'Initial Investment: 2017', and 'Great River Hydro owns a portfolio of 13 hydroelectric facilities in New England totaling 584 MW of generating capacity.' The right sidebar contains navigation links: 'HOME', 'ABOUT', 'STRATEGY', 'TEAM', 'PORTFOLIO' (with sub-links for 'ALL', 'ACTIVE', and 'REALIZED'), 'NEWS', 'CONTACT US', and 'INVESTOR LOGIN'. At the bottom right, there are links for 'Terms of Use | Privacy Notice' and '© ArcLight Capital Partners, LLC'.

Great River Hydro is owned by ArcLight Capital Partners, LLC

“Founded in 2001, we helped pioneer an asset-based private equity approach to investing in the dynamic energy sector. We have invested approximately \$23 billion in 110 transactions since inception, generating strong realized returns for our limited partners from 69 exits across diverse market cycles.” (emphasis added)

Hydro-peaking and water fluctuations

WSE loggers - Bellows Falls Impoundment June 25-Aug 31, 2014



Connecticut River Hydro Relicensing History

- FERC relicensing process began October 2012:
 - *Scoping*
 - *Studies (requests, approval, implementation, reporting)*
- Several delays – VT Yankee closure, 2 Gov't shut-downs, study re-dos, etc.
- Aquatic Resource Working Group pitched some ideas re: “flexibility” to GRH March 2, 2020
- GRH initiated discussions
 - *Began June 4, 2020*
 - *Concluded November 4, 2020*

GRH Mitigation Discussions

Resource Concerns

Stakeholders

- Fish spawning success and movement
- Aquatic habitat availability and persistence
 - Riverine fish species
 - Cobblestone tigerbeetle (state listed)
 - Dwarf wedgemussel (federal & state listed)

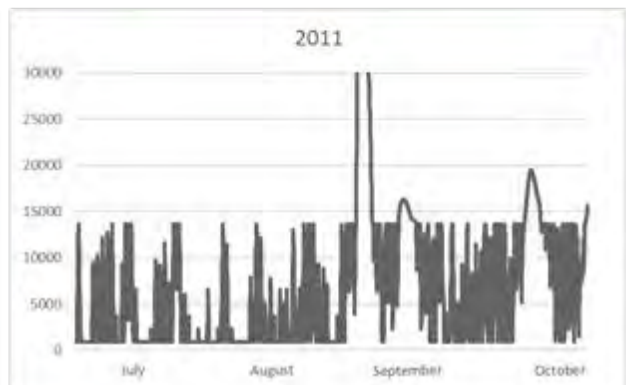
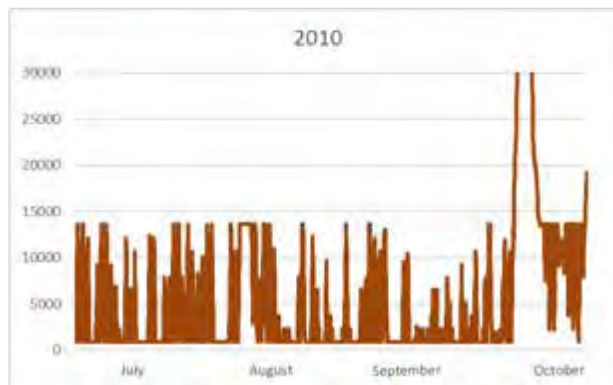
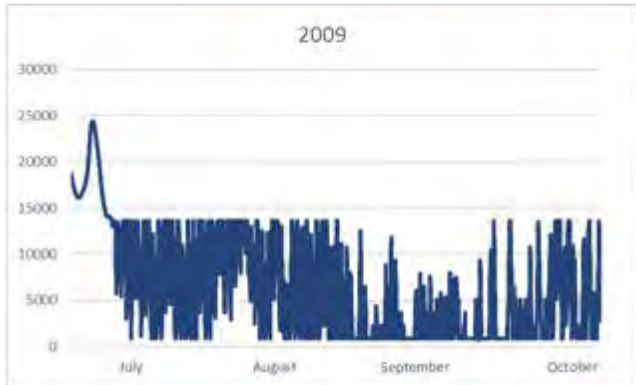
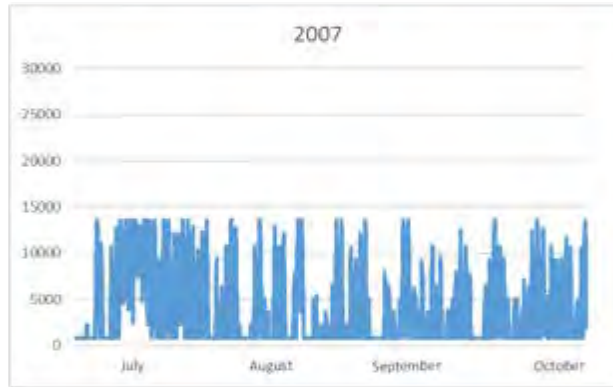
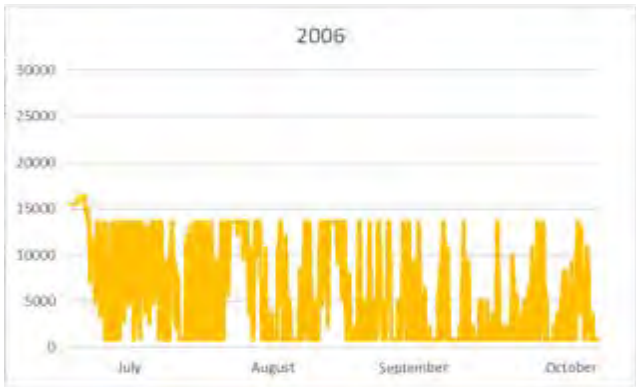
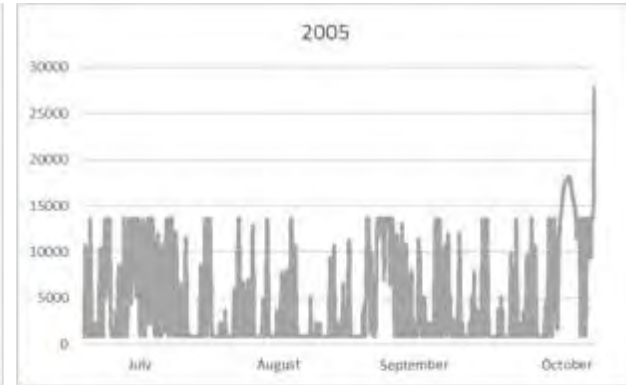
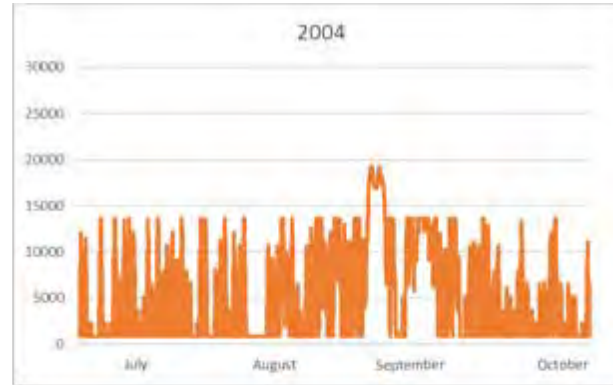
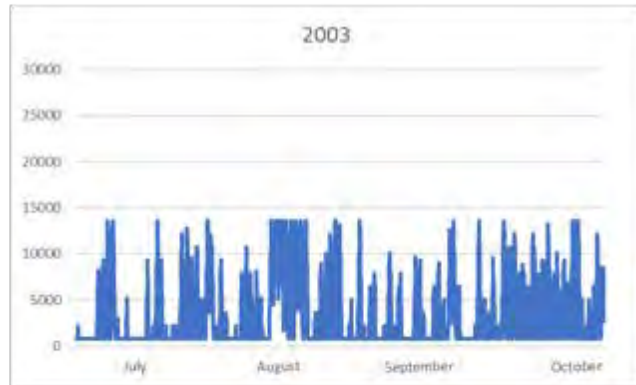
Great River Hydro

- Project Economic Viability
- ISO-NE Compliance
- Operational Flexibility

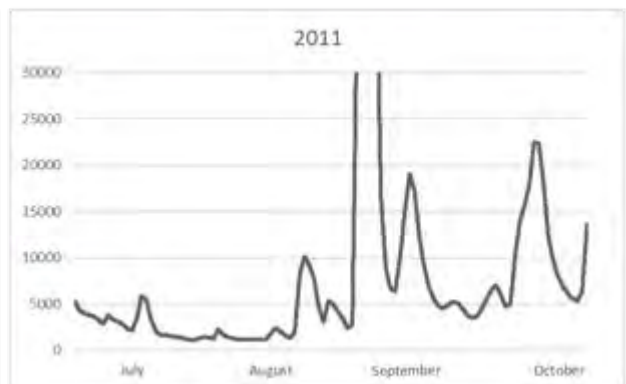
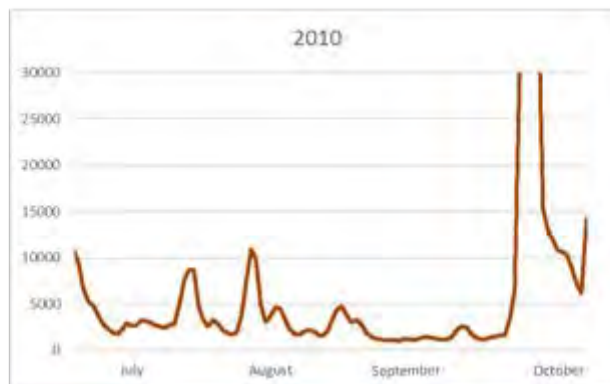
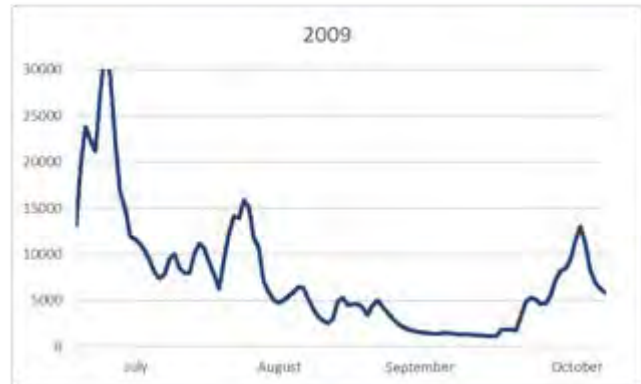
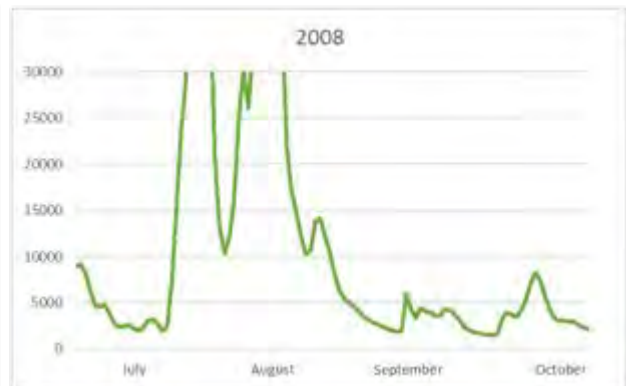
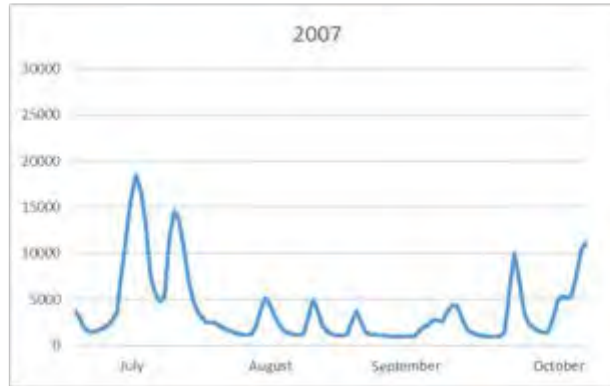
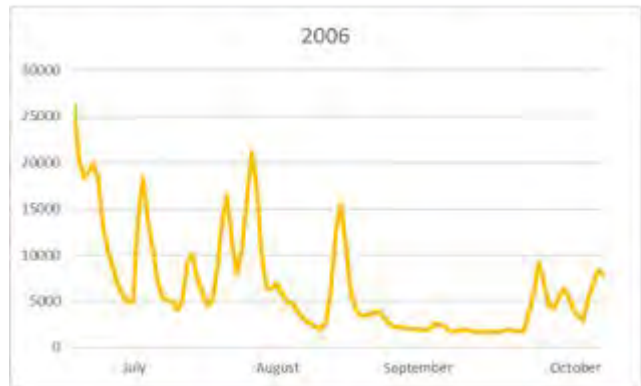
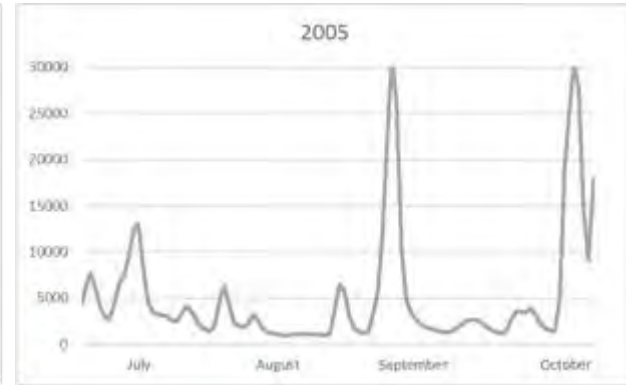
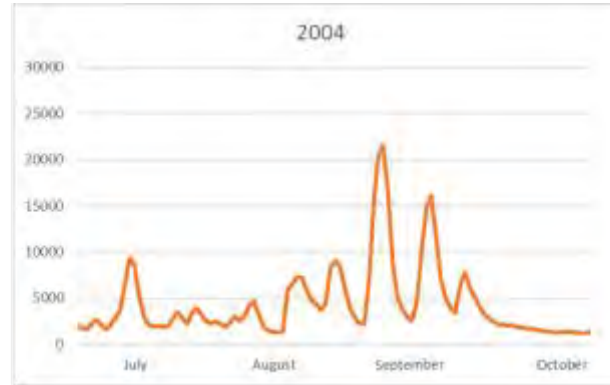
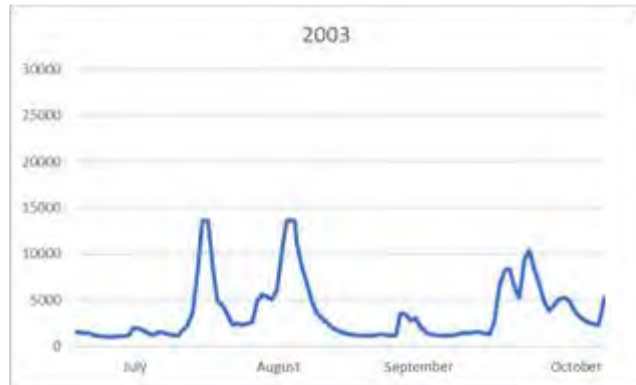
GRH Mitigation
Discussions
*Resource Concerns
NOT Covered*

- Recreation
- Fish Passage
- Erosion
- Cultural Resources

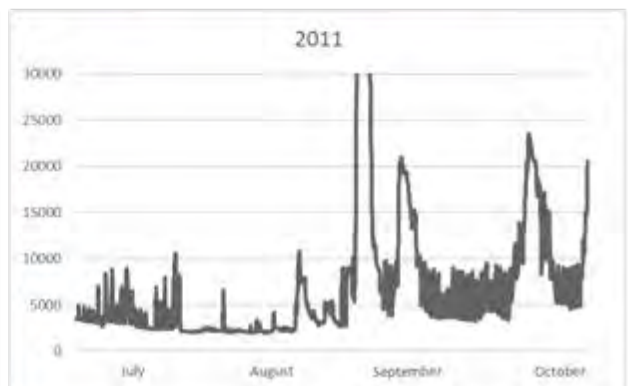
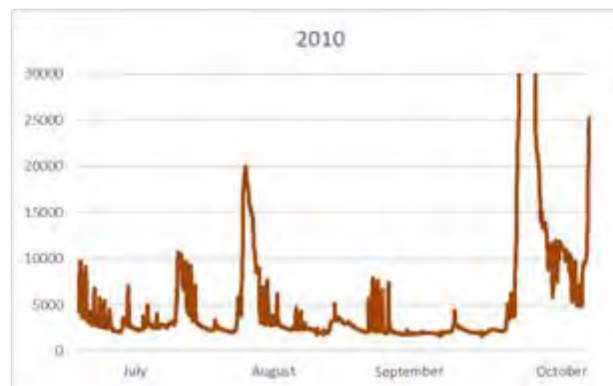
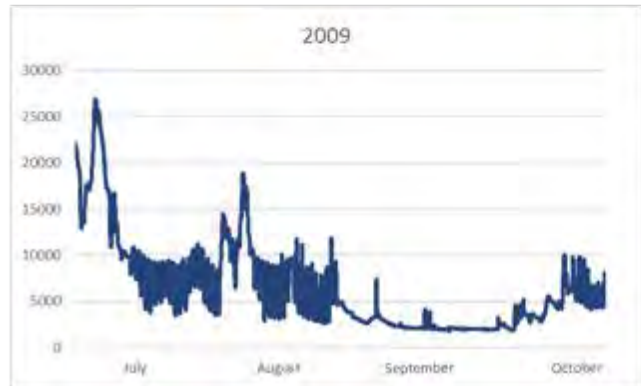
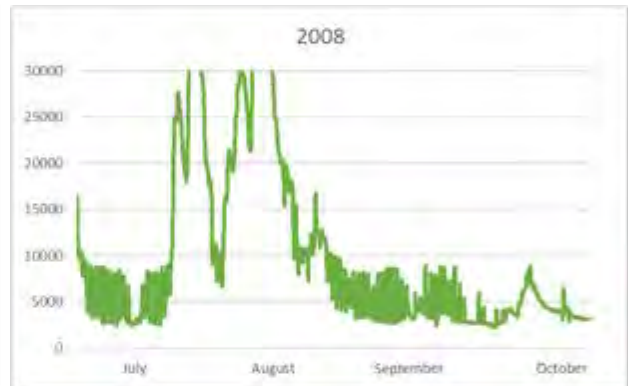
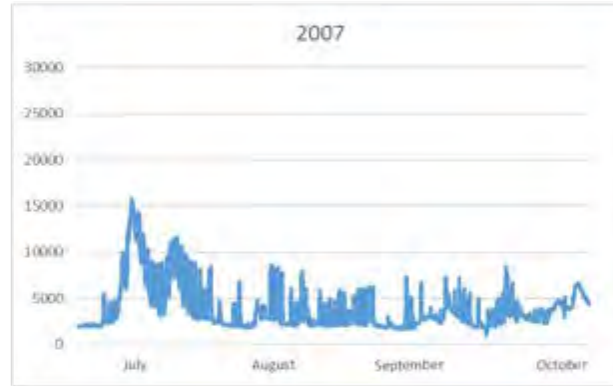
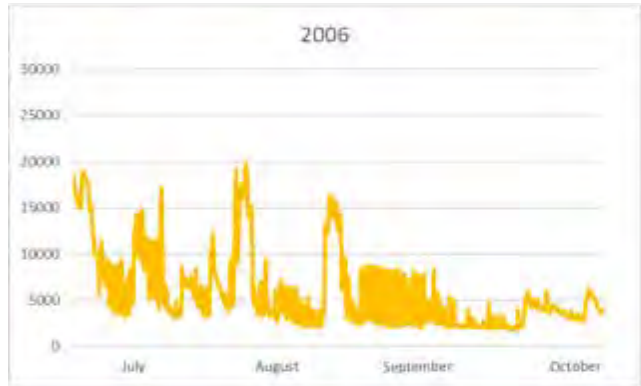
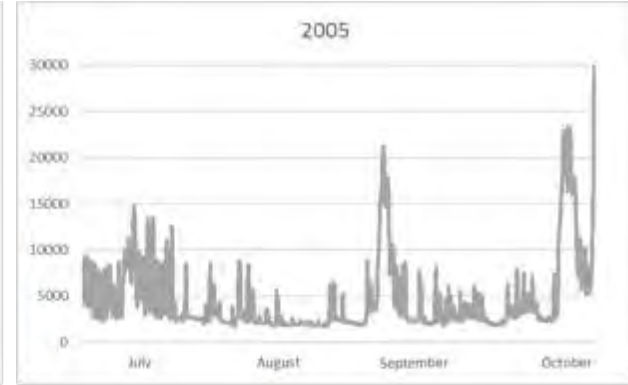
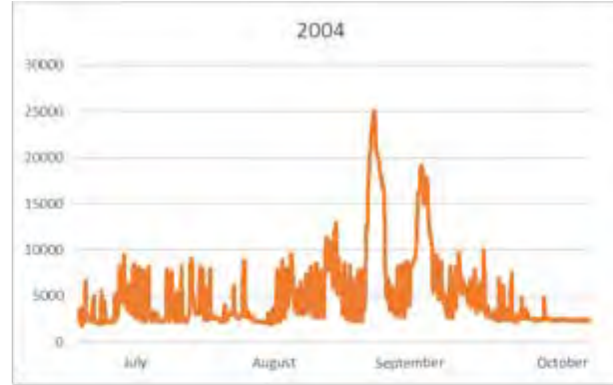
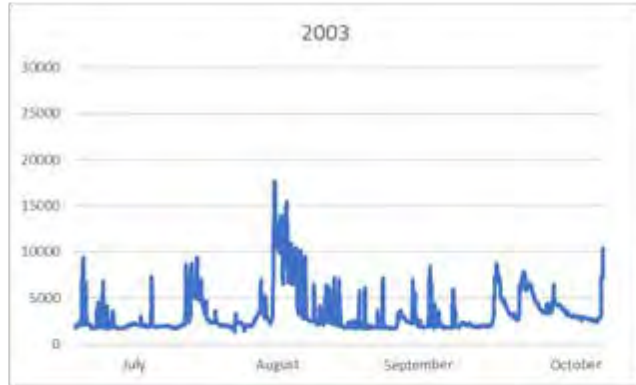
Modeled Current Ops, Wilder Dam, 2003-2011



Estimated Natural, Wilder Dam, 2003-2011



Modeled Inflow = Outflow, Wilder Dam, 2003-2011

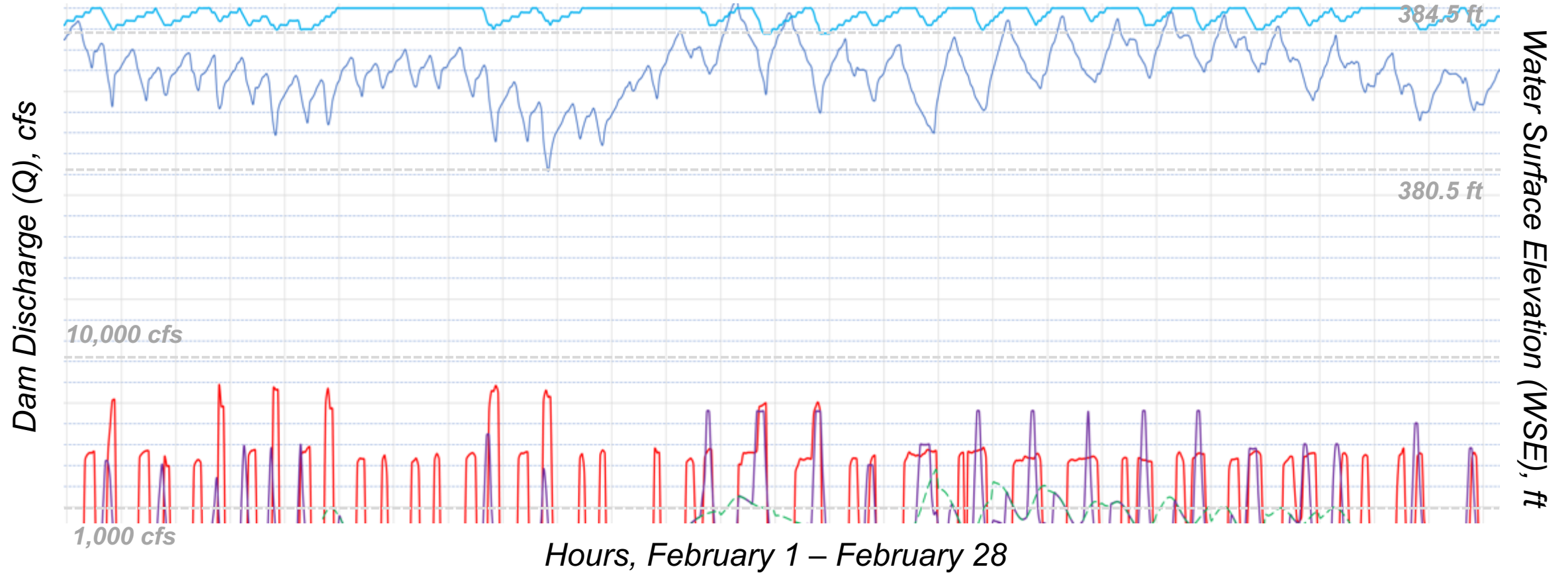


GRH Mitigation Discussions

Outcomes

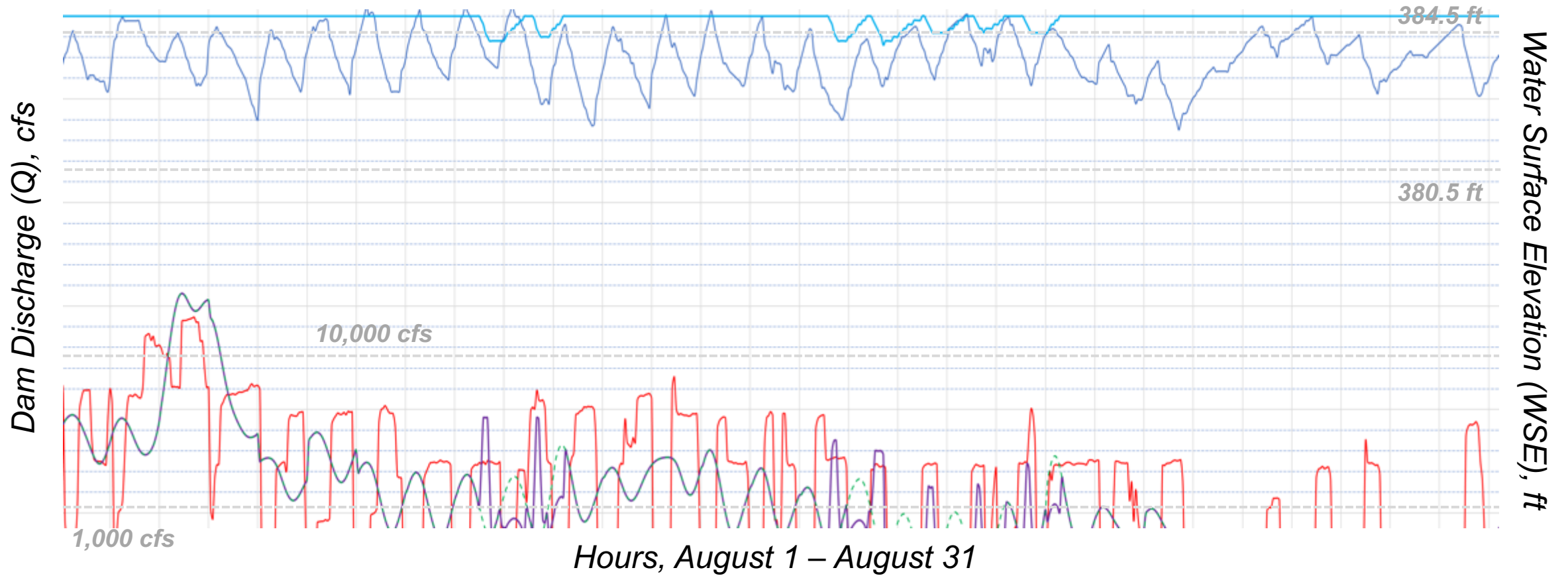
- Base operations are inflow = outflow
- Target WSE with 1-ft bandwidth
- Flexible hours of operation:
 - December-March: 65 hours
 - April-June: 10 hours
 - July-October: 20 hours
 - November: 42 hours
- Ramping:
 - Up-ramping: Gradual in *most* cases
 - Down-ramping: Gradual in *all* cases
- Refill impoundment w/in 48 hours after flex

Simulations for illustration under new operation - Wilder February 2009 example



- Q, Current Ops
- Q, Proposed Ops
- - - Q, Inflow = Outflow
- WSE, Current Ops
- WSE, Proposed Ops

Simulations for illustration under new operation - Wilder August 2009 example



- Q, Current Ops
 - Q, Proposed Ops
 - - Q, Inflow = Outflow
- WSE, Current Ops
 - WSE, Proposed Ops



GRH operations proposal is a win for the river...

- **Improves flows to benefit the ecosystem:**
 - Inflow = outflow as base ops
 - Stabilized reservoir
 - Increased baseflows
 - Reduced fluctuations upstream and downstream
 - Reduced rates of change
- **Improves aquatic habitat:**
 - Increased protection of shoreline habitat
 - Likely reduced erosion on upstream properties and shorelands
 - Increased availability and persistence of downstream habitat
- **Maintains energy & economic value:**
 - Dams maintain ability to support and respond to regional energy needs and emergencies
 - Maintains company's flexibility and responsiveness to energy markets

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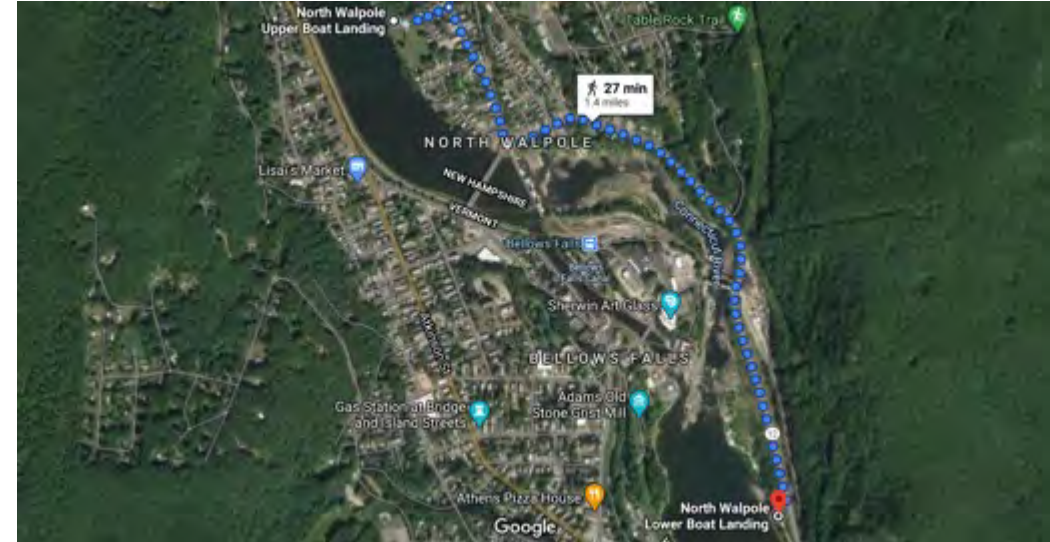
CRC expected significantly more protection, mitigation and enhancement measures in the license application

The application states they will provide the following mitigation:

- a. Maintain three primitive campsites
- b. Operate fish ladders from April 1 to July 15
- c. Discuss additional fish passage requirements with resource agency staff
- d. Develop and sign a Programmatic Agreement for Managing Historic Resources

Recreation Recommendations

- ❖ Annual investments in recreation facilities and programs benchmarked to annual revenue.
- ❖ ADA accessible facilities.
- ❖ Improvements to all portage locations.
- ❖ Fund the Connecticut River Paddlers' Trail.
- ❖ Fund a marketing plan for the Connecticut River valley.
- ❖ Maintain, add, and improve hiking, climbing, cross-country skiing, and mountain bike trails.
- ❖ Maintain recreational facilities in optimal condition throughout the license term.



- ❖ Improve fish viewing facilities and educational programs.
- ❖ Create new historical and archeological interpretive programs.
- ❖ Improve condition notification systems for river users.

Safe and Effective Fish Passage

- Improvements at Vernon Fish ladder
- Safe and effective upstream fish passage (American Eel, American Shad, Sea Lamprey)
- Protecting downstream migrants from turbine mortality
- Expansion of the season for resident species who migrate (white sucker and walleye)
- Appropriate passage for American Eel



Photo courtesy USFWS

Hydropeaking and water level fluctuations



Claremont, NH

Monitoring of River Changes



You Are Powerful

Elected officials work for you.
Business wants your mighty dollar.
Friends & family look up to you.

Use Your Power For Good For Our Rivers



Get involved and speak up for your rivers!

- Sign up for the FERC docket
- Comment to FERC on the license application – after May
- Comment to VT and NH on the 401 Water Quality Certificate
- Comment on the Final Environmental Impact Statement

Contact us and we will
help you!



Contact us:

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